What's 'Bugging' Our Schools? Pest Concerns and Pesticide Use in Maine Public Schools

Report of the School Integrated Pest Management Survey

School Integrated Pest Management Program
Maine Department of Agriculture, Food and Rural Resources
October 2000

This document reports the findings of the School Integrated Pest Management Survey, conducted by mail in February 2000 by the Maine Department of Agriculture, Food, and Rural Resources with in-kind support from that agency and funding from the Maine Board of Pesticides Control and the US Environmental Protection Agency. Additional copies of this report may be obtained by contacting the Maine School IPM Program, 28 State House Station, Augusta, ME 04333, 207-287-7616 (phone), 207-624-5065 (fax) or by e-mail at kathy.murray@state.me.us.

Why was this Survey Done?

Nationwide, parents and other citizens have voiced concern about the risks of pesticide use in schools. Indeed, this is a legitimate concern as it is now recognized that children are more vulnerable to pesticide exposure than adults. A number of states, including Massachusetts and New York, now require that parents be notified in advance of any pending pesticide applications in schools or on school grounds. Some states require schools to implement Integrated Pest Management (IPM) programs and policies aimed at minimizing children's risk of exposure to pesticides. On the national level the School Environmental Protection Act Bill pending before Congress this year (2000), will, if enacted, require all public schools to implement IPM programs.

In Maine, as elsewhere, schools must balance known health risks linked with uncontrolled pest infestations against risks associated with the use of pesticides. For instance, uncontrolled wasp colonies can pose an imminent threat to the health of children sensitive to stings. Cockroach infestations have been linked to asthma. However, schools must ensure that students and staff are not at risk from pesticide exposure.

In an effort to help Maine schools adopt strategies designed to manage pests and reduce pesticide risk, the Maine Department of Agriculture, Food and Rural Resources conducted a survey to determine which pests are problematic in schools and what practices are currently used to manage them. This report presents the results of the survey.

How the Survey was Conducted

All public K-12 school superintendents were asked to provide the names of one or more persons responsible for pest management in each school district, union, or department (hereafter referred to as 'districts') in Maine. From that inquiry, a list of 336 people, including at least one person in each 'district' was compiled. In February 2000, a questionnaire was mailed to each person, so that at least one person, and on average two people, in each of the 168 school 'districts' in Maine received the questionnaire. This was done to ensure that both people with knowledge of outdoor pest management and people with knowledge of indoor pest management were surveyed in each district. Overall, 262 completed questionnaires were returned, for a response rate of 78% resulting in a 95% confidence interval of $\pm$ 4.5%. On a school district level, out of 168 districts polled, responses were received from 148 (88%).

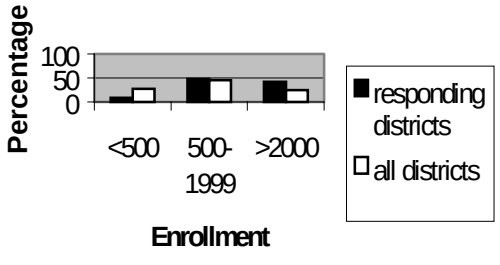
SURVEY RESULTS

The Respondents and their Schools

Most of the respondents were school maintenance supervisors (40%) or their maintenance/custodial staff (35%). Others included food service directors (12%), superintendents (9%), business managers (6%), athletic directors (4%), and teachers (2%). About half (47%) of the respondents were responsible for an entire school district or department, while the other half (53%) were responsible for individual schools.

Among the respondents with district-wide responsibilities there was a fair distribution across districts of different enrollment size (Fig. 1). Although small districts were

Figure 1. Distribution by district enrollment size of respondents with district-wide responsibilities compared with size distribution of all Maine school districts.



somewhat under-represented and large districts were somewhat over-represented, the moderate-sized districts were well represented. Forty-eight percent of those respondents with district-wide responsibilities were from moderate-sized districts (500-2000 students), whereas the proportion of all Maine school districts in that size category is nearly the same (46%).

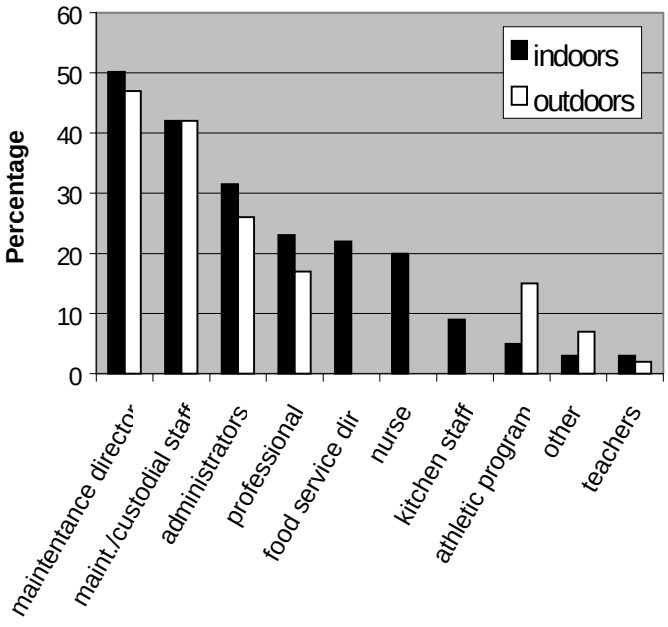
Respondent's schools were located in a variety of geographical environments. For instance, they were reported to be adjacent to residences (81%), forests (56%), parks or fields (35%), or commercial sites (27%).

Who Makes Pest Management Decisions in Maine Schools?

District maintenance directors and their maintenance or custodial staff are most often in the role of 'pest manager' (Fig. 2). Administrators such as superintendents and principals are also frequently involved. In addition, about one-quarter of the respondents indicated that their schools contract with pest control professionals to make indoor pest management decisions and one-sixth said that contracted professionals make the decisions outdoors on school properties. Teachers are almost never included in pest management decision-making.

However, this survey also indicated that 35% of respondents work in school units that regularly use non school-owned properties, such as municipal sports fields, for school-related activities. Pesticide use and other pest control activities done on these non-school properties are usually supervised by another agency, such as a municipal parks department, rather than by school staff. Municipal employees with responsibilities for school properties were not included in this survey.

Figure 2. School staff responsible for pest management decisions indoors in school buildings or outdoors on school properties.

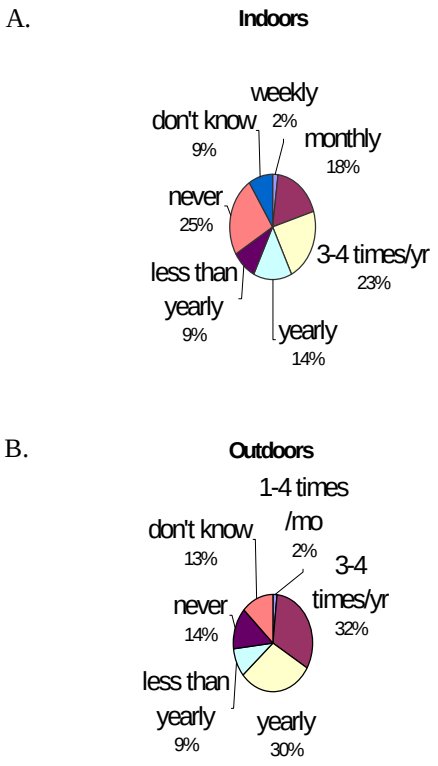


Pesticide Use in Schools

How frequently were pesticides applied on school properties? Outdoors, pesticides other than rodenticides, were reported to be used just once yearly by 30% of respondents (Fig. 3b). Another 32% said those pesticides are applied outdoors three to four times a year. Fourteen percent of respondents said that pesticides are never used outdoors. Rodenticides (mouse and rat control chemicals) are rarely used outdoors; just 4% said they had been used in the last three years.

We asked how often insecticides (insect control chemicals), rodenticides and anti-microbial products are used inside school buildings. The majority (57%) reported that insecticides are used at

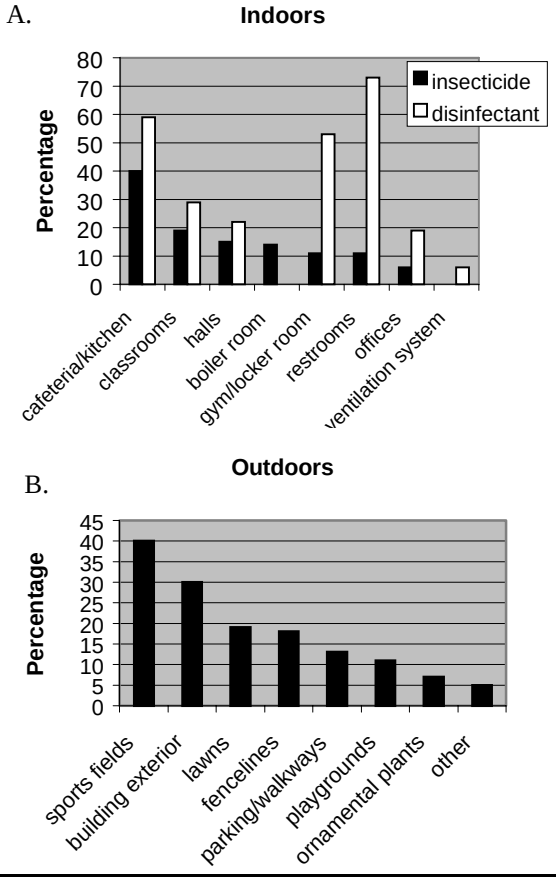
Figure 3. Percentage of respondents indicating how frequently insecticides are used indoors in school buildings (A.) and how frequently all pesticides are used outdoors on school grounds (B.)



least once a year (Fig. 3a). Forty-two percent said they are applied three or more times per year. Rodenticides were reported to be used indoors at least once yearly by 16% of the respondents.

Questions about anti-microbial use (such as disinfectants, bleach, and mold and mildew control products) were included because many of these products are quite toxic and are regulated as pesticides. Two-thirds of the respondents reported that their schools use these products at least daily. Respondents were asked where pesticides and disinfectants are used in and around schools. Not surprisingly, kitchens and sports fields are the most common sites for pesticide applications (other than disinfectants), while kitchens, restrooms and indoor athletic facilities are where most disinfectants are used (Fig. 4). Nineteen percent of the respondents said that classrooms are treated with pesticides.

Figure 4. Percentage of respondents identifying indoor sites (A.) where insecticides and disinfectants are used and outdoor sites (B.) where all pesticides are used.

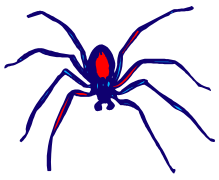


Why do Schools Use Pesticides?

Table 1 shows the percentages of respondents identifying different pests as being problematic in their schools. Ants, mice, lice, flies stinging insects, and microbes are most often considered to be a problem indoors. Outdoors, stinging insects and ants again, top the list, along with weeds.

Table 1. Percentage of respondents citing each of the following pests as being troublesome indoors or outdoors on school properties.

Indoors				**Outdoors**		
Pest	Percent concerned about	Percent taking action against in last 3 yrs.		Pest	Percent concerned about	Percent taking action against in last 3 yrs.
ants	59	52		stinging insects	54	47
mice	50	45		weeds	46	38
head lice	43	30		ants	36	25
flies	33	21		plant disease	21	16
stinging insects	29	21		mice	11	7
mold/mildew	24	20		poison ivy	11	8
water leaks	22	—		turf grubs	10	9
bacteria/virus	18	10		don’t know	11	14
spiders	14	7		mosquitoes	10	1
pantry pests	10	7		ticks	6	2
cockroaches	8	7		others	7	10
rats	4	3		birds	4	3
fleas	4	2		rats	2	2
others	4	3				
don’t know	2	3				



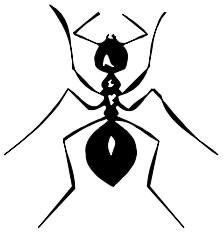
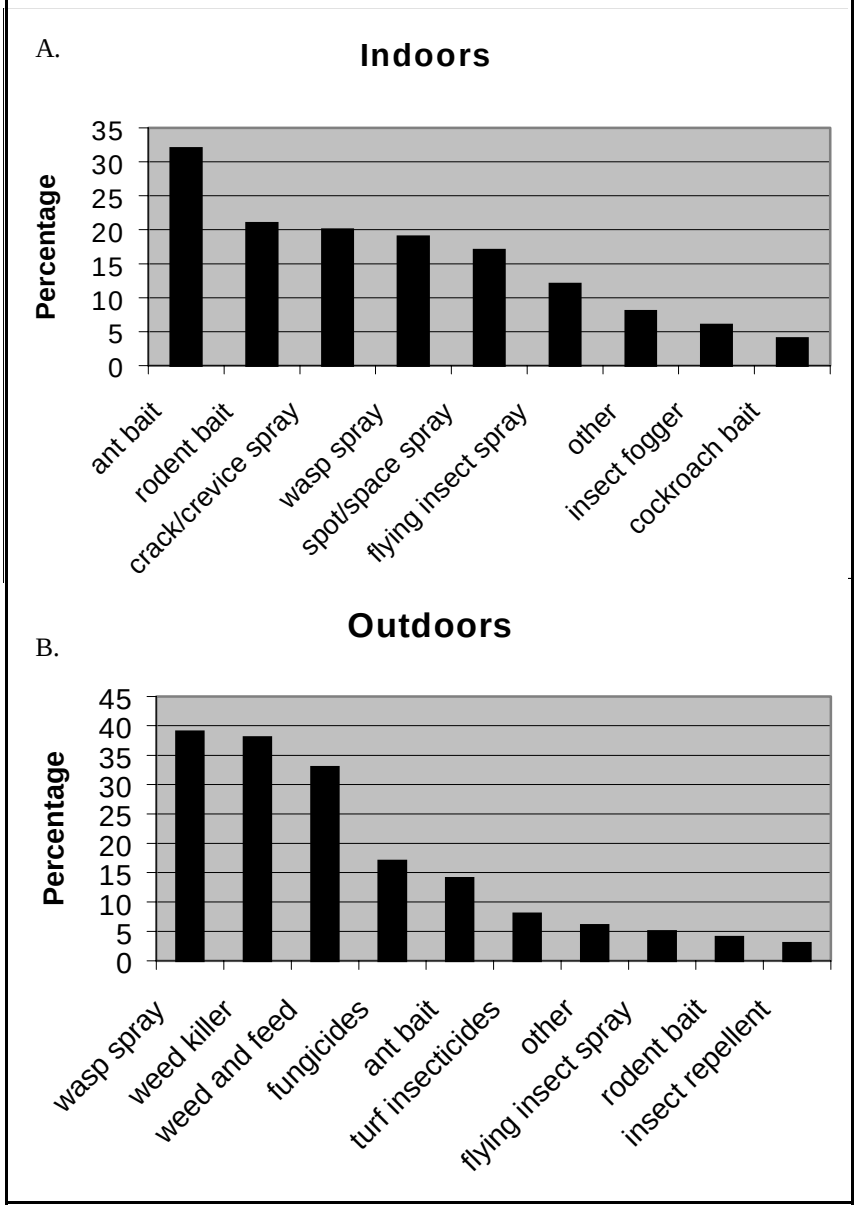
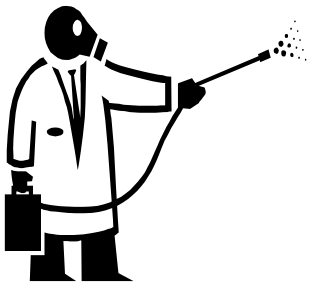


Figure 5 shows that schools often rely on pesticides to control these pests. For example, almost 40% said that wasp sprays are used and more than one-third said that herbicides (weed killers) or fertilizer-plus-herbicide products ('weed and feed') are used outside. Indoors, about one-third said that insecticide-containing ant baits are used and 12-20% said that various insecticide sprays are used. When asked to rate the effectiveness of their school's current pest control programs most respondents said it was extremely effective (38%) or somewhat effective (47%), while only 14% were less satisfied.

Figure 5. Percentage of respondents identifying different types of pesticide formulations used in their schools indoors (A.) and outdoors (B.).



Schools often rely on pesticides to control these pests. Almost one third said that herbicides or fertilizer-plus-herbicide products are used outdoors.



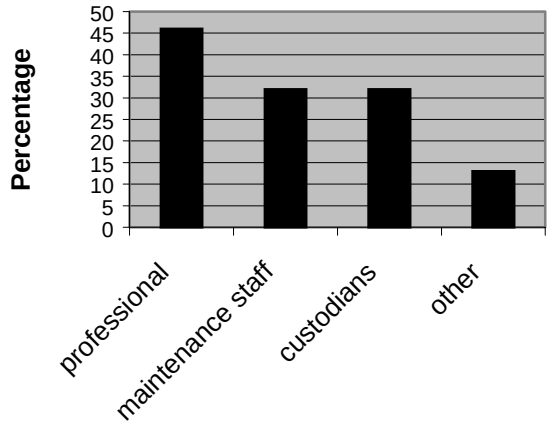
Do Schools Have Policies for Pest Management and Pesticide-Use?

Schools were asked if they have policies for pest management or pesticide use. The overwhelming majority said that their schools either lack such policies (47%) or that they were unaware of any policies (37%). Only 5% said they have a pest control policy and just 8% indicated that they have a pesticide-use policy.

The only area of pest management for which most schools have policies and procedural guidelines is for head lice. This pest is unique, however, because it is a human parasite spread primarily by person-to-person contact. About two-thirds (68%) of respondents said that children are discouraged from sharing personal items with classmates. The same number indicated that a note is sent to notify parents of the infestation. Fifty-nine percent exclude infested persons from school. Half of the respondents indicated that their schools have an education program. Nineteen percent take other actions including extra cleaning of rooms and rugs and regular 'head checks'.

It is considered to be ineffective to apply pesticides in buildings for control of this pest and only seven percent said that their schools do.

Figure 6. Percentage of respondents indicating that pesticides are applied in or on school properties by professional applicators, in-house maintenance staff, custodians, or others.



Who Applies Pesticides in Schools?

According to this survey, almost half of the respondents said their schools hire outside professional contractors to apply pesticides (Fig. 6). Schools were asked what factors are considered when contracting with pest control companies for services. 'Performance' was found to be the most important factor (40%), but a least-toxic approach was also important (29%), as was cost (27%) and liability (21%).

However, about one-third of the respondents said that pesticides are also applied by in-house school maintenance staff and another one-third said that custodial staff apply pesticides. Schools were asked whether in-house staff that apply pesticides are licensed by the Maine Board of Pesticides Control as required by law. It was found that few of the school staff members applying pesticides are licensed to do so. In fact, 53% said that none of their pesticide-using staff are licensed. Just 6% of the respondents said that all staff who apply pesticides are licensed and 9% said some of them are licensed.

Pesticide Posting and Records: Are Schools in Compliance with Laws?

Maine statutes require that pesticide application records be kept on file and made available to Board of Pesticide Control inspectors upon request. We asked where pesticide records are kept and found that few schools keep such records. Twenty-four

percent said that records are kept in the district offices or at a school and 28% said that the professional applicator keeps them. However, 37% of the respondents said that either records aren't kept or they don't know where they are kept.

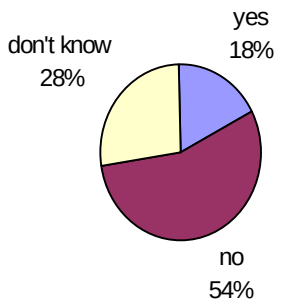
Similarly, while it is required that outdoor areas treated with pesticides be posted with a small sign, only 26% of respondents say that is done at their school.

Schools are not required to routinely notify anyone when pesticides are applied and apparently few schools provide notification voluntarily. Fifty percent said that either there is no notification policy or they are unaware of such a policy. Only 5% provide written notification to parents or occupants when pesticides are applied and less than 2% maintain a list of pesticide-sensitive students or staff.

Are Maine Schools Using Integrated Pest Management to Minimize Pesticide Use?

We described Integrated Pest Management (IPM) as being 'a systematic approach to keeping pests below harmful levels which uses a variety of methods for monitoring and managing pests and often minimizes pesticide use'. Then we asked if schools are using an IPM approach to pest management. Less than one-fifth said that their schools are using IPM methods (Figure 7).

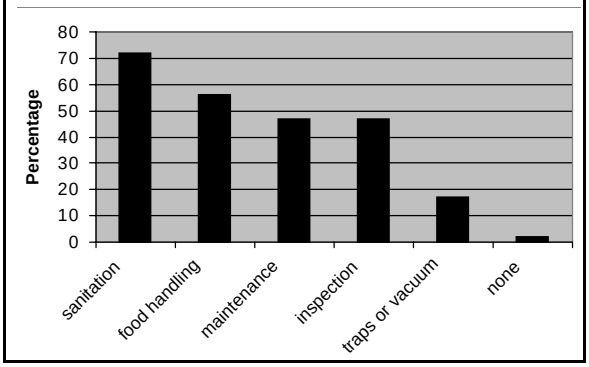
Figure 7. Percentage of respondents indicating that Integrated Pest Management (IPM) is used in their schools.



Schools scored better, however, when respondents were given a list of specific IPM practices and asked which ones their schools used. Figure 8 shows the percentage of respondents that said their schools use any of those practices, which are shown grouped into the more general categories of sanitation, food handling, maintenance, inspection, or the use of traps or vacuums for removing pests.

These results indicate that our schools have a strong foundation of good sanitation and maintenance practices upon which to build IPM programs for further reducing pest problems with minimal pesticide use.

Figure 8. Percentage of respondents identifying specific practices (shown here grouped into more general categories) used by schools for preventing or reducing pest problems.



What Do Schools Need to Improve Pest Management Practices and Minimize Pesticide Use?

When asked what kind of assistance would best serve schools almost half identified training sessions for custodial (48%) and maintenance staff (43%). Educational materials for staff were also identified as a need by 43% of the respondents. Twenty-three

percent said that guidelines for pest control contracts would be helpful. Respondents also said they would like information on 'introduction to IPM' (42%), writing IPM policies and plans (34%), least-toxic approaches to pest management (50%), least-toxic approaches to cleaning and disinfecting (43%), Maine pesticide regulations (45%), and sports field management (38%).

CONCLUSIONS

The objective of this survey was to determine which pests are problematic in Maine schools, what pest management practices are used and whether schools have policies regarding pest management or pesticide use. The information gained from this survey will be used by state agencies and cooperators to develop programs designed to aid schools in developing and implementing Integrated Pest Management (IPM). The IPM approach is widely recognized as the most effective means of managing pests while minimizing pesticide use.

The results show that a few pests, primarily mice, lice and microbes indoors, weeds outdoors, and stinging insects and ants both indoors and out, are considered to be a problem for most schools. These data also indicate that schools often rely on pesticides for controlling these pests. The biggest usages of pesticides are for ant control indoors and for weed control outdoors. Disinfectants are used daily for routine cleaning by most schools.

Very few schools have policies regarding pesticide use or pest management. We found that schools need assistance in complying with pesticide regulations especially in terms of licensing requirements for in-house pesticide applicators. It is apparent that school staff and administration are not fully aware that pesticides may only be applied (with a few exceptions for routine cleaning and for protection from stinging insects) by persons having a commercial applicator license. Eliminating unlicensed applications of pesticides will improve pesticide use and effectiveness in schools.

The results of this survey also suggest that schools could benefit from improved communication among staff. For instance, more involvement of teachers in pest management decision-making could help to ensure that only licensed applicators use pesticides, that pest sightings are reported promptly, and that sanitation practices for reducing pest problems are used in the classrooms.

Although most school staff participating in this survey are not aware of the term 'Integrated Pest Management', schools appear to have a strong foundation of good sanitation and maintenance practices for preventing pest problems upon which IPM programs can be built. Education and training opportunities for school staff and administrators should be offered to help schools build on that foundation to add more structured pest monitoring and reporting, good communication and performance guidelines, well-designed pest management contracts and greater emphasis on the use of least-toxic pest management methods.

This survey shows that schools need and want more information and training on how to implement IPM to minimize pesticide use. These results indicate that programs should be developed to aid Maine schools in the development and implementation of IPM programs and to bring them into compliance with state pesticide regulations. Adoption of IPM by schools will help to reduce risks posed by unnecessary and sometimes improper pesticide use to ensure we are providing the safest possible learning environment for our children and community.